

29 April 2003
Application No.:09/757,856
Docket: 1028.co

b.) Amendments to the Claims

1. (currently amended) A method for fusing an optical fiber lens, comprising:
injecting light into an optical fiber having a wedge-shaped fiber lens formed by
polishing at a proximal end of the optical fiber;
detecting a diffraction pattern of the light exiting from ~~a~~ the fiber lens ~~at a
proximal end of the optical fiber;~~ and
electro-fusing the fiber lens in response to a two-dimensional distribution of
the diffraction pattern.
2. (previously amended) A method as claimed in claim 1, wherein the step of
injecting the light into the optical fiber comprises energizing a laser that is
coupled to a distal end of the optical fiber.
3. (original) A method as claimed in claim 1, wherein the step of detecting the
diffraction pattern comprises detecting a far-field diffraction pattern.
4. (original) A method as claimed in claim 1, wherein the step of detecting the
diffraction pattern comprises positioning a two-dimensional detector optically in
front of the fiber lens.
5. (original) A method as claimed in claim 1, further comprising analyzing a
two-dimensional distribution of the diffraction pattern.
6. (original) A method as claimed in claim 5, wherein the step of analyzing the
diffraction pattern comprised determining a ratio of a lateral size to a transverse
size of the diffraction pattern.
7. (original) A method as claimed in claim 1, wherein the step of fusing the fiber
lens comprises exposing the fiber lens to an electrical arc.
8. (currently amended) A system for fusing an optical fiber lens, comprising:
a light source that injects light into an optical fiber;

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a detector that detects a two-dimensional distribution of a diffraction pattern of the light exiting from a fiber lens at a proximal end of the optical fiber, the fiber lens being wedge-shaped and having been formed by polishing;
an arc fuser that fuses the fiber lens; and
a controller that activates the arc fuser in response to the two-dimensional distribution of the diffraction pattern detected by the detector.

9. (original) A system as claimed in claim 8, wherein the light source comprises a laser that is coupled to a distal end of the optical fiber.

10. (previously amended) A system as claimed in claim 8, wherein the detector is positioned relative to the fiber lens to detect a far-field diffraction pattern.

11. (original) A system as claimed in claim 8, wherein the detector is positioned greater than 0.5 centimeters from the fiber lens.

12. (original) A system as claimed in claim 8, wherein detector comprises a camera.

13. (cancelled)

14. (original) A system as claimed in claim 8, wherein the controller determines a ratio of a lateral size to a transverse size of the diffraction pattern.

15. (original) A system as claimed in claim 8, wherein the controller activates the arc fuser in a pulsed fashion until a desired diffraction pattern is detected by the detector.

16. (currently amended) A method for fusing an optical fiber lens, comprising:
injecting light into an optical fiber having a wedge-shaped fiber lens formed by polishing at a proximal end of the optical fiber;
detecting an aspect ratio of a diffraction pattern of the light exiting from a the fiber lens at a proximal end of the optical fiber by positioning a two-dimensional detector optically in front of the fiber lens; and

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electro-fusing the fiber lens in response to the aspect ratio of the diffraction pattern by exposing the fiber lens to an electrical arc until an optimal aspect ratio is detected.

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17. (previously added) A method as claimed in claim 16, wherein the step of electro-fusing the fiber lens by exposing the fiber lens to the electrical arc comprises exposing the fiber lens to electrical arc pulses.
